# CIVIL TECH LABS

# 5, 1st Cross, Srinivasa Colony, Mission Road, Bangalore - 560027
Ph: 080 - 4114 2867, Email: civiltechlabs@gmail.com


## TEST REPORT

## GRADATION TEST ON COARSE AGGREGATES 20mm ↓ Graded

| | |
|---|---|
| **Name & Address of the Customer** | AEE, Yelahanka Satellite Sub Division, BBMP. |
| **Name of Work** | Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04. |
| **Name of Agency** | M/s. Technical Manager (West), KRIDL |
| **Date of Testing** | 01/04/2017 |
| **Specific Gravity** | 2.64 |
| **Water Absorption** | 0.32% |
| **Technical Reference** | IS : 2386(Part I)-1963 (Reaffirmed 2011), IS : 2386 ( Part III )-1963 (Reaffirmed 2011 ) |

| IS Sieve Designation (mm) | Sieve Analysis (% Passing IS Sieve) | Grading Requirement as per IS:383-1970 (Reaffirmed 2011) | Remarks |
|---|---|---|---|
| 40 | 100 | 100 | Satisfies the requirement |
| 20 | 97.4 | 95-100 | |
| 10 | 45.2 | 25-55 | |
| 4.75 | 8.4 | 0-10 | |

**Note:**

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3. Any correction invalidates this report.
4. The results are based on the test conducted on samples supplied by the customer.

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**(KHUSHBOO L.)**
**Quality Manager**

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## TEST REPORT

## GRADATION TEST ON COARSE AGGREGATES 40mm ↓ Graded

| | |
|---|---|
| **Name & Address of the Customer** | AEE, Yelahanka Satellite Sub Division, BBMP. |
| **Name of Work** | Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04. |
| **Name of Agency** | M/s. Technical Manager (West), KRIDL |
| **Date of Testing** | 01/04/2017 |
| **Specific Gravity** | 2.68 |
| **Water Absorption** | 0.28% |
| **Technical Reference** | IS : 2386(Part I)-1963 (Reaffirmed 2011), IS : 2386 ( Part III )-1963 (Reaffirmed 2011 ) |

| IS Sieve Designation (mm) | Sieve Analysis (% Passing IS Sieve) | Grading Requirement as per IS:383-1970 (Reaffirmed 2011) | Remarks |
|---|---|---|---|
| 80 | 100 | 100 | Satisfies the requirement |
| 40 | 97.5 | 95-100 | |
| 20 | 55.2 | 30-70 | |
| 10 | 25.3 | 10-35 | |
| 4.75 | 4.1 | 0-5 | |

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## TEST REPORT

## GRADATION TEST ON FINE AGGREGATES

| | |
|---|---|
| **Name & Address of the Customer** | AEE, Yelahanka Satellite Sub Division, BBMP. |
| **Name of Work** | Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04. |
| **Name of Agency** | M/s. Technical Manager (West), KRIDL |
| **Date of Testing** | 01/04/2017 |
| **Specific Gravity** | 2.58 |
| **Technical Reference** | IS : 2386(Part I)-1963 (Reaffirmed 2011), IS : 2386 ( Part III )-1963 (Reaffirmed 2011 ) |

| Sample | IS Sieve designation (mm) | Sieve Analysis (% Passing IS Sieve) | Grading Requirement as per IS:383-1970 (Reaffirmed 2011) | | | | Grading Zone | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | ZONE-I | ZONE-II | ZONE-III | ZONE-IV | | |
| River Sand | 10 | 100 | 100 | 100 | 100 | 100 | II | Satisfies the requirement |
| | 4.75 | 98.4 | 90-100 | 90-100 | 90-100 | 95-100 | | |
| | 2.36 | 86.5 | 60-95 | 75-100 | 85-100 | 95-100 | | |
| | 1.18 | 75.4 | 30-70 | 55-90 | 75-100 | 90-100 | | |
| | 0.6 | 46.8 | 15-34 | 35-59 | 60-79 | 80-100 | | |
| | 0.3 | 25.8 | 5-20 | 8-30 | 12-40 | 15-50 | | |
| | 0.15 | 7.4 | 0-10 | 0-10 | 0-10 | 0-15 | | |

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## TEST REPORT

## TEST ON CEMENT

| | |
|---|---|
| **Name & Address of the Customer** | AEE, Yelahanka Satellite Sub Division, BBMP. |
| **Name of Work** | Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04. |
| **Name of the Agency** | M/s. Technical Manager (West), KRIDL |
| **Date of Testing** | 01/04/2017 |

| Tests | Test Method As Per IS & Apparatus | | Results | | Requirements As Per IS 8112:1989 | Remarks |
|---|---|---|---|---|---|---|
| | IS Code | Method | Value | Unit | | |
| Initial Setting Time | IS-4031 (Part-5) 1988 | VICAT | 55 | min | Not Less Than 30 Minutes | Satisfies Requirement |
| Final Setting Time | IS-4031 (Part-5) 1988 | VICAT | 481 | min | Not More Than 600 Minutes | Satisfies Requirement |
| Soundness | IS-4031 (Part-3) 1988 | LE-CHATELIER | 4 | mm | Not More Than 10 mm | Satisfies Requirement |

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# CIVIL TECH LABS

Accredited by **NABL** as per ISO/ IEC 17025 : 2005

# 5, 1st Cross, Srinivasa Colony, Mission Road, Bangalore - 560027

Ph: 080 - 4114 2867 / Mob. : 96862 31801, Email: civiltechlabs@gmail.com

T-2654


To,

Assistant Executive Engineer,
Yelahanka Satellite Sub Division,
BBMP.

20th April 2017

Dear Sir,

**Sub:** Testing of Bituminous Macadam & Bituminous Concrete.

As requested, tests on physical properties were carried out for the Bituminous Macadam & Bituminous Concrete supplied by you, for the work of **'Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04.'**

Please find the enclosed Test Reports of the above.

**Thanking You,**
**For Civil Tech Labs**

CIVIL TECH LABS BANGALORE

**(KHUSHBOO L.)**
**Quality Manager**

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# CIVIL TECH LABS

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## TEST REPORT

### TEST ON THE DETERMINATION OF BITUMEN CONTENT ON BITUMINOUS MACADAM MIX-GRADE 2

| | |
|---|---|
| **Name & Address of the Customer** | AEE, Yelahanka Satellite Sub Division, BBMP. |
| **Name of Work** | Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04. |
| **Name of the Agency** | M/s. Technical Manager (West), KRIDL |
| **Date of Testing** | 18/04/2017 |

**A)**

| Sl. No. | Test | Test Method | Technical Reference |
|---|---|---|---|
| 1 | Extraction of mineral aggregate | Test Method A (Centrifuge Method) | ASTM: D2172/ D2172M-11 |
| 2 | Determination of amount of mineral matter/fines in the extract | Ashing Method | |

**B)**

**Specification: As Per MORTH (4th Revision) Table 500-4 BM-Grade -2, Bitumen Content for BM Grade-2 is 3.3 % TO 3.5 %**

| Sl. No. | Description | Values |
|---|---|---|
| 1 | Weight of bituminous mixture before extraction test, $W_1$ g | 2000 |
| 2 | Weight of mineral aggregate obtained from centrifuge extractor, $W_2$ g | 1921.7 |
| 3 | Weight of mineral matter in the total volume of extract (by ashing), $W_3$ g | 11.4 |
| 4 | Total weight of aggregate in the bituminous mixture, $W_4$ g = ($W_2$ +$W_3$) g | 1933.1 |
| 5 | Total weight of Bitumen extracted from the mixture, $W_5$ g = ($W_1$-$W_4$) g | 66.9 |
| 6 | Bitumen content in %, ($W_5$/$W_1$) % | 3.34 |

| | |
|---|---|
| **Remarks** | **Satisfies the requirements.** |

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## TEST REPORT

### GRADATION TEST ON BITUMINOUS MACADAM MIX GRADE - 2

| | |
|---|---|
| **Name & Address of the Customer** | AEE, Yelahanka Satellite Sub Division, BBMP. |
| **Name of Work** | Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04. |
| **Name of the Agency** | M/s. Technical Manager (West), KRIDL |
| **Date of Testing** | 18/04/2017 |
| **Technical Reference** | IS : 2386(Part I)–1963 (Reaffirmed 2011) |

| | Sample-1 | | |
|---|---|---|---|
| **IS Sieve Designation (mm)** | **% By Weight Passing IS Sieve as per MORTH (4th Revision) Table 500-4 for BM Grade-2** | **Actual % By Weight Passing IS Sieve** | **Remarks** |
| 26.5 | 100 | **100** | **Satisfies the requirement.** |
| 19 | 90-100 | **97.8** | |
| 13.2 | 56-88 | **74.5** | |
| 4.75 | 16-36 | **27.6** | |
| 2.36 | 4-19 | **16.5** | |
| 0.3 | 2-10 | **7.8** | |
| 0.075 | 0-8 | **6.5** | |

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# TEST REPORT

## GRADATION TEST ON BITUMINOUS MACADAM MIX GRADE - 2

| | |
|---|---|
| **Name & Address of the Customer** | AEE, Yelahanka Satellite Sub Division, BBMP. |
| **Name of Work** | Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04. |
| **Name of the agency** | M/s. Technical Manager (West), KRIDL |
| **Date of Testing** | 18/04/2017 |
| **Technical Reference** | IS : 2386(Part I)-1963 (Reaffirmed 2011) |

| | Sample-2 | | |
|---|---|---|---|
| **IS Sieve Designation (mm)** | **% By Weight Passing IS Sieve as per MORTH (4th Revision) Table 500-4 for BM Grade-2** | **Actual % By Weight Passing IS Sieve** | **Remarks** |
| 26.5 | 100 | **100** | **Satisfies the requirement.** |
| 19 | 90-100 | **98.3** | |
| 13.2 | 56-88 | **73.4** | |
| 4.75 | 16-36 | **26.5** | |
| 2.36 | 4-19 | **17.4** | |
| 0.3 | 2-10 | **8.4** | |
| 0.075 | 0-8 | **7.2** | |

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## TEST REPORT

**TEST ON DETERMINATION OF BITUMEN CONTENT ON BITUMINOUS CONCRETE MIX-GRADE 2**

| | |
|---|---|
| **Name & Address of the Customer** | AEE, Yelahanka Satellite Sub Division, BBMP. |
| **Name of Work** | Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04. |
| **Name of Agency** | M/s. Technical Manager (West), KRIDL |
| **Date of Testing** | 20/04/2017 |

**A)**

| Sl. No. | Test | Test Method | Technical Reference |
|---|---|---|---|
| 1 | Extraction of mineral aggregate | Test Method A (Centrifuge Method) | ASTM: D2172/ D2172M-11 |
| 2 | Determination of amount of mineral matter/fines in the extract | Ashing Method | |

**B)**

**Specification: As Per MORTH (4th Revision) Table 500-18, Bitumen Content for BC Grade-2 is 5% to 7%**

| Sl. No. | Description | Values |
|---|---|---|
| 1 | Weight of bituminous mixture before extraction test, $W_1$ g | 2000.00 |
| 2 | Weight of mineral aggregate obtained from centrifuge extractor, $W_2$ g | 1872.63 |
| 3 | Weight of mineral matter in the total volume of extract (by ashing), $W_3$ g | 12.84 |
| 4 | Total weight of aggregate in the bituminous mixture, $W_4$ g = ($W_2$ +$W_3$) g | 1885.47 |
| 5 | Total weight of Bitumen extracted from the mixture, $W_5$ g = ($W_1$-$W_4$) g | 114.53 |
| 6 | Bitumen content in %, ($W_5$/$W_1$) % | 5.73 |

| | |
|---|---|
| **Remarks** | **Satisfies the requirement.** |

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## TEST REPORT

### GRADATION TEST ON BITUMINOUS CONCRETE MIX GRADE - 2

| | |
|---|---|
| **Name & Address of the Customer** | AEE, Yelahanka Satellite Sub Division, BBMP. |
| **Name of Work** | Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04. |
| **Name of Agency** | M/s. Technical Manager (West), KRIDL |
| **Date of Testing** | 20/04/2017 |
| **Technical Reference** | IS : 2386(Part I)-1963 (Reaffirmed 2011) |

| | Sample-1 | | |
|---|---|---|---|
| **IS Sieve Designation (mm)** | **% By Weight Passing IS Sieve as per MORTH (4th Revision) Table 500-18 for BC Grade-2** | **Actual % By Weight Passing IS Sieve** | **Remarks** |
| 19 | 100 | **100** | **Satisfies the requirements** |
| 13.2 | 79-100 | **98.4** | |
| 9.5 | 70-88 | **81.6** | |
| 4.75 | 53-71 | **62.5** | |
| 2.36 | 42-58 | **45.5** | |
| 1.18 | 34-48 | **38.5** | |
| 0.6 | 26-38 | **32.6** | |
| 0.3 | 18-28 | **23.8** | |
| 0.15 | 12-20 | **17.8** | |
| 0.075 | 4-10 | **7.5** | |

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## TEST REPORT

**GRADATION TEST ON BITUMINOUS CONCRETE MIX GRADE - 2**

| | |
|---|---|
| **Name & Address of the Customer** | AEE, Yelahanka Satellite Sub Division, BBMP. |
| **Name of Work** | Asphalting to roads and improvements to drains in A sector and Chikkabommasandra of ward no. 04. |
| **Name of Agency** | M/s. Technical Manager (West), KRIDL |
| **Date of Testing** | 20/04/2017 |
| **Technical Reference** | IS : 2386(Part I)–1963 (Reaffirmed 2011) |

| | Sample-2 | | |
|---|---|---|---|
| **IS Sieve Designation (mm)** | **% By Weight Passing IS Sieve as per MORTH (4th Revision) Table 500-18 for BC Grade-2** | **Actual % By Weight Passing IS Sieve** | **Remarks** |
| 19 | 100 | **100** | **Satisfies the requirements** |
| 13.2 | 79-100 | **96.5** | |
| 9.5 | 70-88 | **83.5** | |
| 4.75 | 53-71 | **63.3** | |
| 2.36 | 42-58 | **46.2** | |
| 1.18 | 34-48 | **37.4** | |
| 0.6 | 26-38 | **31.6** | |
| 0.3 | 18-28 | **24.8** | |
| 0.15 | 12-20 | **18.4** | |
| 0.075 | 4-10 | **8.4** | |

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